MICHIGAN DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENT

INTEROFFICE COMMUNICATION

TO: Deborah Larsen, Project Manager, Specialized Sampling Unit
Superfund Section, Remediation and Redevelopment Division

FROM: Charles Graff, Geologist, Geological Support Unit, Superfund Section
Remediation and Redevelopment Division

C.W.G.

DATE: February 23, 2010

SUBJECT: Comments on "Groundwater Issues, North Bronson Industrial Area Operable Unit 1, Bronson, Michigan," by Leo M. Brausch on Behalf of the Potentially Responsible Party (PRP) Group, dated January 27, 2010, Branch County Michigan

Introduction

Review of the Groundwater Issues document noted above for the North Bronson Industrial Area (NBIA) site is completed. This document prepared by Leo Brausch for the United States Environmental Protection Agency, and the NBIA PRP Group was received February 1, 2010. The two issues covered in this document are the ongoing Groundwater Delineation Study associated with the Western Lagoon Area (WLA), and the environmental restrictive covenants for those areas outside of the property of the City of Bronson that are, or may become, impacted by site-related contamination. The delineation issues were discussed with the PRP Group in October 2008, March 2009, correspondence in August and September of 2009, and on a call on December 18, 2009. The restrictive covenant issues were discussed during a few of these conversations.

It was necessary to raise this latter topic in past correspondence due to contamination being present outside of those areas delineated as the restrictive area covered under the City of Bronson Groundwater Ordinance. The City Ordinance would not prevent access to those areas impacted by contaminated groundwater outside the city limits. I will not address the environmental restrictive covenant issue in this comment letter. I understand that you and Steve Cunningham are involved in those discussions.

My Comments follow.

Summary of Comments

• Stated Objective of the Delineation

The PRP Group was initially reluctant to continue with the plume delineation due to the potential for other sources of contamination commingling with contamination likely associated with the WLA. Our emphasis has been to simply delineate the plume to be able to discern whether nearby residents' water wells along Burr Oak Road may become impacted or not. The objective as stated in this document is to "...complete the delineation of the limits of impacted groundwater north and west of the Western Lagoon Area, i.e., between the Western Lagoons and the residents along Burr Oak Road who employ private wells."

• Planned Work Will Not Meet the Objective or Site Needs
The plan has been modified and significantly improved over the proposal received in March of 2009. However, the approach as described in this document will not adequately address plume delineation. Five borings are planned, four monitoring wells will then be installed, but only in boring locations determined to be "clean" through the vertical aquifer sampling (VAS). Furthermore, the text indicates that if any VAS borings detect volatile organic compounds (VOCs), additional borings would be drilled farther away from the last boring toward the west (away from plume), and subsequent monitoring well installations would be into clean portions of the aquifer.

Stepping out from contaminated areas will help delineate the plume; however, if the aquifer is clean, then simply placing borings or monitoring wells into clean portions of the aquifer hundreds of feet from known VOC detects does little to accomplish plume delineation or to help determine contaminant migration potentials. Both chemical and stratigraphic data are necessary to evaluate migration potential. In addition, the VOC detects that define the estimated plume boundary to the west on Figures 1 and 2 are based almost entirely on one-time groundwater sampling as part of plume delineation. Permanent monitoring wells should also be installed into contaminated portions of the plume to evaluate plume expansion and contraction through time.

There is little chance of detecting VOCs where some of these borings are currently located (see Figures 1 and 2). The potentiometric map of January 22, 2009, illustrates why GP-20 is in a location that will not likely provide very useful information, i.e., low return of information for effort expended. The contamination detected on the north side CD#30 would not be expected to migrate to the northwest towards GP-20 precluding unusual stratigraphy, e.g., buried flow channels. The groundwater data do not appear favorable for such migration. Additionally, MW-37 has not had any VOC detections and it is somewhat upgradient of the GP-20 location according to potentiometric maps.

The same potentiometric map indicates that there are no data to provide a better understanding of the flow regime south of the drain and west of the WLA. At this point in time, the assumption is that flow is generally towards the west. Without additional monitoring points, the groundwater flow in this area, where contamination is present, is unknown; it could be west or northwest. Boring GP-24 is about 350 feet northwest of boring location GP-19 that had 8 micrograms per Liter vinyl chloride during VAS. Placing a boring in this location will not meet the stated objective of delineating the limits of impacted groundwater in this part of the site; it is too far away to provide any meaningful data about the plume. Additional water level points are also needed to evaluate groundwater flow.

The text also indicates that each monitoring well will be screened at the base of the aquifer. It is presumed that these monitoring wells will perform as sentinel wells to detect contamination migrating to those locations before it reaches residential water wells. However, without knowing where the contamination is located vertically within the aquifer, predetermining where to set the well screen is not appropriate. The well screens should be based on VAS results at each boring location.

• Recommended Changes to Current Boring Locations and Site Work
To more appropriately meet the objective of this work, several of these borings should be relocated. It is understood that these areas west of the WLA are currently being farmed, so the

locations for permanent monitoring well locations will have to be chosen to address this situation.

To provide the necessary hydraulic, and stratigraphic as well as geochemical data needed to evaluate the contaminant migration potential and plume delineation, I suggest performing the VAS in temporary borings first, and then when data are in hand, choose permanent monitoring well locations. Based on the text in this document, it appears that the PRPs are planning to use a mobile lab for fast analytical turnaround times for groundwater samples, e.g., the decision to install monitoring wells only into clean portions of the aquifer. It follows that the analytical data would need to be evaluated before deciding where to install the monitoring wells. That the PRPs are planning to use a mobile lab is an assumption, but is also a suggestion in case one is not planned for use.

The text suggests stepping out if contamination is detected in a VAS boring. This is practical for plume delineation. However, as noted above, starting these borings in steps that are hundreds of feet from the last known positive detections (from temporary borings) will not provide the data needed for plume delineation. I suggest that the initial borings be located in the following locations, and that permanent monitoring wells are located at the edges of the detected plume boundaries, both within and outside of the plume to be able to monitor plume migration through time:

- GP-21: Perform this VAS boring across CD#30 from MW-42, instead of almost 100 feet to the northwest. This will move the boring/well closer to known groundwater impacts and provide some symmetry to MW-42 on the south side of the drain.
- GP-20: Move this boring due south to a location approximately 30 feet north of CD#30, southeast of newly relocated GP-21. No permanent monitoring well can be installed here due to ongoing agricultural activity, but the VAS and stratigraphic data will provide a better understanding of the potential contaminant migration along the north side of the drain. This boring location also conforms closer to the groundwater flow lines as depicted in recent potentiometric maps.
- GP-24: Move this boring approximately 225 feet southeast of its current location just northwest of the assumed plume boundary line as depicted on Figures 1 and 2. If contamination is present, depending on the concentration, another boring could be stepped out following the same irrigation piping route. It appears that permanent monitoring wells are acceptable along this piping route according to Table 1. The table indicates that installing a boring and subsequent monitoring well in the currently chosen location will "...confirm [the] western limit of impacts." As noted above, this objective cannot be met by the existing planned activity; the boring must be closer to the assumed plume boundary.
- GP-23: If we assume that the groundwater flow west of the WLA is either westerly or northwesterly, this location is too far to the north to provide a sentinel well between where we know the plume exists and the two residential homes on the western side of Burr Oak Road. Based on assumed groundwater flow directions, it would be prudent to relocate this boring/well farther to the southeast along the eastern side of Burr Oak Road.
- GP-25: A new boring/well between GP-21 and MW-43 near the edge of the estimated plume boundary; this boring, in combination with GP-20, should provide sufficient data on the plume boundary along the northern side of CD#30. A

monitoring well can be installed near the edge of the plume boundary and GP-21 could serve as a monitoring well just outside of the plume boundary.

- GP-26: A new monitoring well along a drainage ditch south of MW-40 near the borings GPMW-41 and GP-17 to evaluate groundwater flow direction and to provide data on plume migration; based on site conditions, it appears that installing a monitoring well in this area is feasible.

See the attached map for the relocated boring locations and additional monitoring well locations.

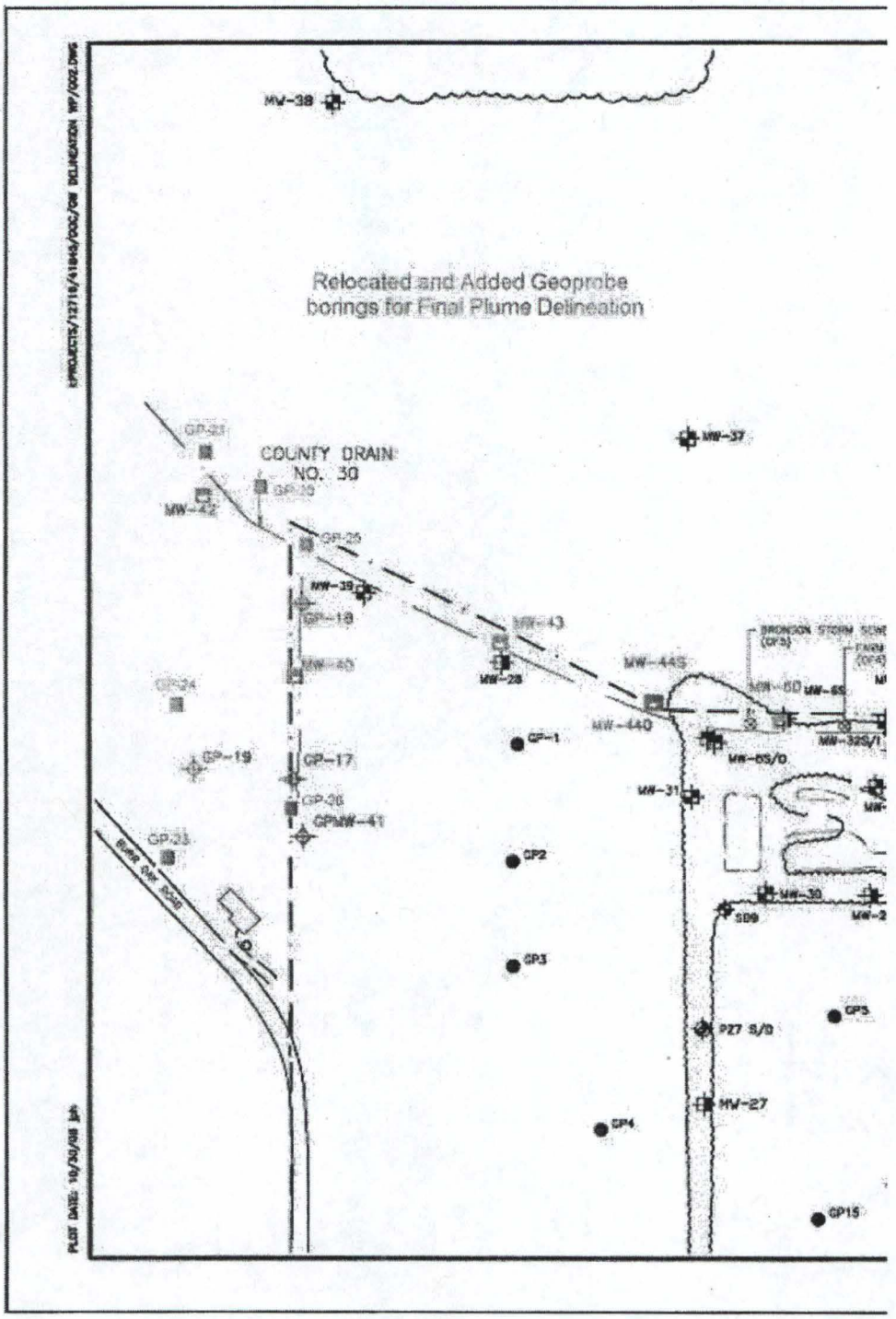
The monitoring well development performed during the last installations needs to be modified; it was performed mainly with a sampling pump, which is not an appropriate method by which to develop a monitoring well. The drill crew should use a weighted surge block to develop the formation surrounding the well screen. Sediment removal can be accomplished by a number of methods including sample pumps, but whatever method is used must be able to remove heavy sediment loads without a high potential for failure.

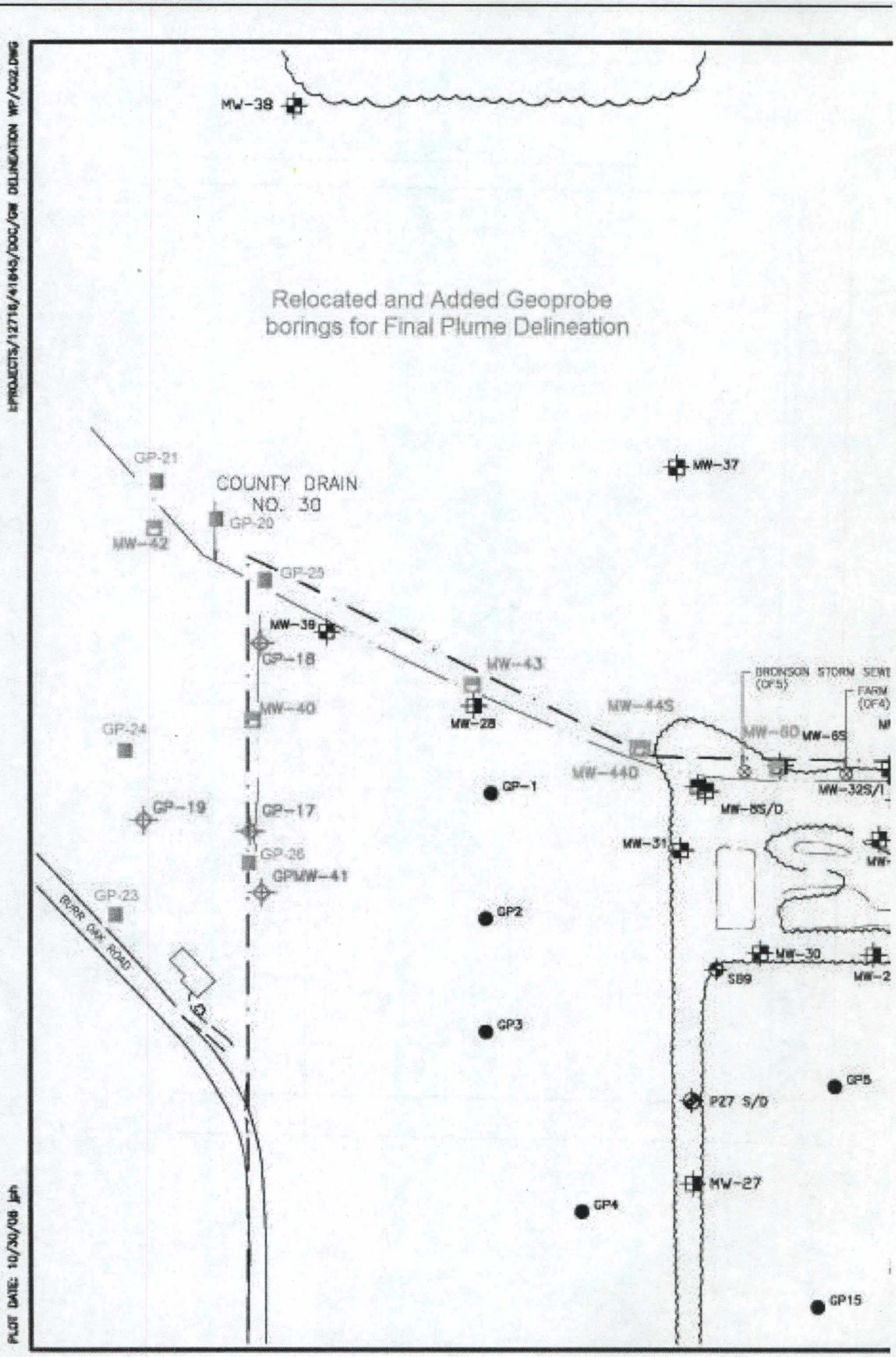
This concludes my review of this document. If you have any other concerns or questions, please contact me.

Attachment
cc: James Heinzman, Department of Natural Resources and Environment

S:RRDSFS/Sites/North Bronson Industrial Area/Docs/GSU/BronsonNBIA_GWIssuesFPlumeIDelin_WLA.cg.210 2 23 2010

Charles W. Graff


Relocated and Added Geoprobe
borings for Final Plume Delineation
COUNTY DRAIN
NO. 30
MW-38
MW-37
MW-42
GP-25
MW-39
GP-18
MW-40
MW-43
MW-28
MW-44S
MW-44D
GP-24
GP-19
GP-17
GP-26
GPMW-41
GP-23
GP-1
GP2
GP3
GP4
GP5
GP15
MW-31
MW-65/D
MW-32S/I
MW-30
SD9
PZ7 S/D
MW-27


Relocated and Added Geoprobe
borings for Final Plume Delineation
COUNTY DRAIN
NO. 30
RIVER OAK ROAD
MW-38
GP-21
MW-42
GP-20
GP-25
MW-39
GP-18
MW-40
GP-24
GP-19
GP-17
GP-26
GPMW-41
GP-23
MW-37
MW-43
MW-28
MW-44S
MW-44D
BRONSON STORM SEWE
(DF5)
FARM
(DF4)
MW-6D
MW-6S
MW-32S/I
MW-6S/D
MW-31
GP-1
GP2
GP3
GP4
MW-30
SB9
MW-2
GP5
P27 S/D
MW-27
GP15
PLOT DATE: 10/30/08 jph
I:PROJECTS/12718/41843/DOC/GW DELINEATION WP/002.DWG